Masami MIZUSHIMA[**]: **A revision of Drymaria cordata Willd.** (Critical studies on Japanese plants 3)[*]

水島正美[**]: *Drymaria cordata* Willd. の再検討（日本植物寸評 3）

Two years before, Dr. J. Ohwi kindly suggested me that the plant of the Idzu Islands identified as *Drymaria cordata* seems to be different from that of the Ryukyus (the Loochoo Archipelago) in the shape and indumentum of flower-buds. Since then I have been devoted myself to the problem, and have extended my study to a whole revision of the populations hitherto passed as *Drymaria cordata* from southern Asia as well as West Indies, South America, and Africa. During the course of my study, I had also to examine the Linnaean specimen regarding the typification of *Drymaria cordata* (L.) Willdenow.

Here I have to record my indebtedness for the loan of ample materials from West Indies and South America to Dr. C. E. Kobuski of the Harvard University, U. S. A., and to the Directors of Royal Botanic Gardens, Kew and Jardin Botanique de l'Etat, Belgique for specimens of West Indies and Africa respectively This paper would never have appeared without kind helps and advices of the following persons: Dr. N. Y. Sandwith of the Linnean Society of London; Dr. C. G. G. J. van Steenis and Dr. J. H. Kern of the Flora Malesiana Foundation, Leiden; Dr. E. H. Walker of U. S. National Museum; Dr. G. Cufodontis of Botanisches Institut der Universität Wien; Dr. K. H. Rechinger of Naturhistorisches Museum, Wien; Dr. J. R. Sealy of Royal Botanic Gardens, Kew; Dr. A. Lawalrée of Jardin Botanique de l'Etat, Belgique; Dr. H. St. John of University of Hawaii; Dr. T. S. Liu of Taiwan Museum, Formosa; Miss M. C. Neal of B. P. Bishop Museum, Hawaii; Dr. T. Hosokawa of Kyushu University; Dr. S. Hatusima of Kagoshima University; to whom I wish to express my best regards and thanks. To Dr. H. Hara of University of Tokyo, I offer my warm gratitude for his kind direction.

Drymaria cordata has long been said to be a weed of the pantropic distribution, and the name has been applied by numerous authors to the polymorphous populations of temperate and tropical regions.

The name *Drymaria cordata* Willd. is based on *Holosteum cordatum* L., Sp. Pl. 88 (1753)——'Holosteum foliis subcordatis. ......Habitat in Jamaica, Surinama,' where he also cited in the synonymy his Hortus Upsaliensis and Hermann, Paradisus Batavus (1698 or 1705)——'Alsine americana, nummulariae folio.' Hortus Upsaliensis p. 23–24 (1748) reads: 'Alsine foliis subcordatis, stipulis utrinque quaternis. ......Habitat in Jamaica, Surinama, Noveboraco. Hospitatur in tepidario, annua, repens. †......Horticultura topographica......14. Indiae occidentales.......γ. Annuae, Alsine 1.' In the Linnaean herbarium, there is a specimen (no. 109–1) of this plant marked as 'Hortus Upsaliensis.' Thus the specimen was made of the plant transplanted from Jamaica and cultivated in the Uppsala Botanical Garden, and the type locality of *Drymaria cordata* (L.) Willd. (=*Holosteum cordatum* L.=Alsine foliis subcordatis......L.) is doubtlessly West Indies, viz. Jamaica. Thence the Linnaean specimen, no. 109–1, is safely chosen as the lectotype. According to Dr. N. Y. Sandwith, who kindly examined the Linnaean specimen on my demand, the specimen has sepals, especially outer ones, which are glandular-papillose both along and by the side of the midrib for quite 2/3 of the length of the outer surface; the papillae are by no means confined to the midrib, but they sometimes extend over at least half the width of the sepal on each side of the midrib. The pedicels are densely papillose-tomentose except for the very top which is glabrous. The Jamaican specimen collected by C. R. Orcutt, no. 3208 (K) which I examined, agrees well with this Linnaean specimen in the indumentum of sepals and pedicels. The characters mentioned above can be regarded as the diagnostic ones easily recognizable in the nomenclaturally typical form.

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Taking the type locality and type specimen into consideration, I examined the specimens from West Indies and South America, and I noticed that the plant is very variable morphologically as was described by Rohrbach in Martius, Fl. Brasil. **14** (2): 259 (1872). In the populations of West Indies and South America, flower-buds are rounded at the base, acute at the tip and broadest below the middle, and consist of five oblong or oblong-lanceolate sepals which are rounded and glandular-papillose dorsally, carinate below, sharply pointed and sometimes recurved at the tip, and faintly or narrowly marked with white on the margin. The glandular-papillae cover almost the whole outer surface of sepals or are sometimes confined on or near the midrib. Pedicels are covered densely with glandular-papillae except for the very top which is often glabrous (Fig. 1, B). These glandular-papillae consist of one or two cells notwithstanding the length, and some specimens with extremely short papillae appear to have seemingly glabrous sepals, and such a form appears to be not uncommon in the populations of West Indies and South America even of Jamaica, the type locality; and as an extreme form, some specimens have entirely glabrous sepals. The glandular-papillae occur sparingly on stems and rarely extend to leaves. Although the variations in floral organs in the New World populations are well described by Rohrbach, op. cit. (1872), I add some points not represented in his statement. Styles are generally about 0.8 mm long, and are connate, at most, up to a half of the length (Fig. 1, B). Ovaries are columellate and the placenta is radiate as in *Stellaria*, and ovules are about four or sometimes more. Fawcett and Rendle (Fl. Jamaica **3** (1): 175, 1914) described that seeds are eight to two in a capsule, however, in the specimens that I examined, there is no example which has so many ovules as eight. Ripe seeds are 1 mm or less in diameter, dark brown and covered with deltoid protuberances especially on the back. Stamens are mostly five to three with broad connectives often separating at least the lower end of anther-cells. Petals are five or rarely four, two-cleft with oblong, oblanceolate to linear-oblong lobes, and narrowed to the distinct claw. The upper end of claw or the base of lobes has most often a pair of minute teeth or more rarely smooth. Petal-lobes are acute to acuminate and never obtuse or rounded, and are almost always one-nerved without any trace of lateral nerves (Fig. 1, B). Thus the nomenclaturally typical form with the characters explained above is well represented in the populations of those regions. Although the plant of the New World is highly polrmorphous, the name *Drymaria cordata* (L.) Willd. var. *cordata* is applicable to the New World plant against another plant in the islands of the Pacific which I call var. *pacifica* m. as below.

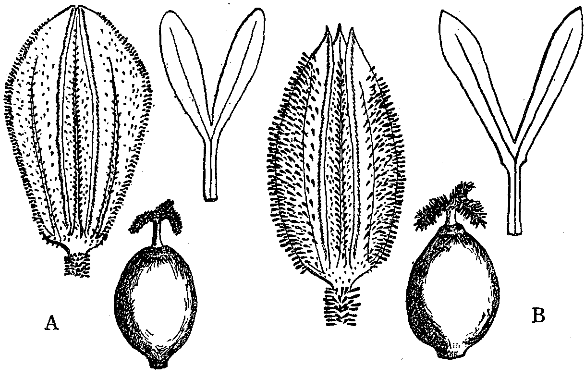

Fig. 1. Bud, petal and pistil. A: *Drymaria diandra*. B: *D. cordata* var. *cordata* ×10.

In such Pacific island as Galapagos Islands, Hawaiian Islands, Bonin Islands, and in Isl. Hachijo and Aogashima at the south end of Islands, a different population occurs. It is distinguishable from the New World one in having sepals very sparingly glandular-granulate or sometimes entirely glabrous and more scarious in texture, pedicels naked about 0.5 mm long at the upper end, styles more deeply cleft, and usually more numerous ovules. Besides these key characters, the following description will not be impertinent. Internodes on the upper part of the stem are glabrous or sometimes thinly glandular-granulate near both ends, but the foliage is quite glabrous. Sepals are, under a strong lens, generally dotted with unicellular glandular-granules or are entirely glabrous. Moreover, they are oblong, acute at the tip, scarious, light green, opaque and narrowly white-margined when fresh, but are often straw-coloured and somewhat shining when dry especially in fruiting specimens. Petal-lobes are as in var. *cordata*, but, in the specimens which I have examined, they are all linear-oblong to oblanceolate, and none was oblong or oblanceolate-oblong. Stamens are as in var. *cordata*. Styles are about 0.5 mm long and are coherent less that 1/3 of the length, and have shorter stigma-papillae. The number of ovule in an ovary is also subjected to the variation ranging from three to eleven, and ovules are usually five to seven, or rarely three in Galapagos and Hawaii, and five to eleven in the Bonins and Idzu Islands. Seeds are as in var. *cordata*. To make clear the difference between var. *cordata* and the Pacific plant, the following note will be of use.

The length of naked part of pedicels are very variable in var. *cordata*, and some specimens agree with those of the Pacific islands in having the longer naked part, yet it has sepals more herbaceous and either acuminate at the tip or distinctly glandular-papillose on the back. Few specimens from West Indies have deeply cut styles more than 2/3 of the length as in the Pacific plant, but they are separable by their sepals sharply pointed at the tip and densely glandular-papillose on the outer surface and by the inconspicuous naked part of the pedicel as well (cf. specimens no. 1404 from St. Domingo, no. 4246 from Cuba, and no. 8347 from Haiti, all in GH). Although the above mentioned characteristics of sepals in the Pacific plant are scarcely represented in var. *cordata*, it is of interest that some specimens from lower altitudes of Colombia, Bolivia and Peru are hardly separable from the Pacific form. In these countries, this form occurs below 1500 m high on the Pacific slope, but it is also noteworthy that this form appears to be replaced by the continental one between 1500 m and 1700 m in altitude. It seems to be strange that there is no specimen of var. *pacifica* from Ecuador. Although *Drymaria cordata* Willd. is variable, the form of the Pacific islands and the countries mentioned above in the continental South America seems to me to merit of recognition as a separate geographical variety, var. *pacifica* m. (cf. Fig. 2).

This species seems, on the whole, to be an intricated population complex, and in the specimens from the continental South America there are some specimens which can not be referred to either var. *cordata* or var. *pacifica*, although they seem to belong to *D. cordata* Willd. The trial of the cytotaxonomical investigation basing on materials from the whole distributional range may also be needful.

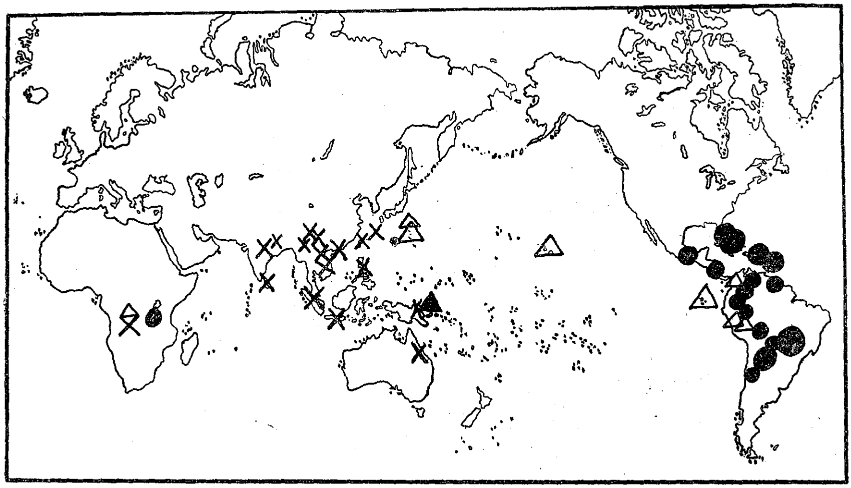

Fig. 2. Distribution map. Solid circle: *Drymaria cordata* var. *cordata*. Triangle: *D. cordata* var. *pacifica*, solid one indicates '*D. cordata*' by Schum. & Laut. Oblique cross: *D. diandra*.

At present, however, it will be convenient for recognition to divide this wide-ranging *Drymaria cordata* Willd. into two geographical varieties, var. *cordata* and var. *pacifica* m. as stated above. The former is distributed in the entire continental South America, West Indies, Central America, and at least Florida in North America (Fig. 2). Though Linnaeus cited 'Noveboraco' (New York) in Hortus Upsaliensis p. 24, in recent manuals dealing with the flora of northeastern North America the name *D. cordata* is not cited. Var. *cordata* may presumably be the aboriginal race of continental South America because of its higher variablity there than in West Indies. The plant in West Indies appears to be relatively uniform, and it is decidedly referred to var. *cordata*. While var. *pacifica* occupies a wide area in the Pacific, but it appears to lack in Polynesia, Melanesia, and in Micronesia except for the report by Schumann and Lauterbach (Die Flora der Deutschen

Schutzgebiete in den Südsee 309, 1901) from Bismarck Archipelago (Fig. 2). Var. *pacifica* may be the native of Galapagos Islands, and presumably the lower altitudes on the Pacific slope of continental South America too. From these areas the plant widened its range of distribution by the human agency.

In Hawaiian Islands, Hillebrand did not cite *D. cordata* in his Flora of Hawaiian Islands (1888), but now the plant is well established there as a weed in gardens, waysides, and especially on wet grounds in half-shades. Since Hillebrand died in 1886, i. e. two years before the publication of his manuscript, thence the introduction of this weed into Hawaii can be after than the last fifteen years of nineteenth century, and coincidentally the plant in Hawaii has no connection with the Acapulco—Manila galleon route which has long continued and actively affected to the flora of Oceanic islands; and still of much interest, so far as I know, the plant is represented there by var. *pacifica* only. The facts that the weed had no local or common name and was not a pest in Hawaii in 1929 (Pope, Manual of Wayside Plants of Hawaii 65, 1929) also denote of its recent introduction. On the occurrence of this variety in the Bonins, however, the Acapulco—Manila trade line might have some influence, yet Merrill (An Enumeration of the Plants of Guam, 1914) and Kanehira (Flora Micronesica, 1933) did not report this plant from Guam which is on that trade line. If the plant in the Bonins is independent to the agency of Spaniards, the later agency of man must be commented. Since the plant of the Bonins is represented wholly by var. *pacifica*, the origin of the population is no doubt Hawaiian Islands or Galapagos Islands and adjacent lowlands of continental South America. The first precise record of *D. cordata* from the Bonins was made by H. Hattori (Pflanzengeographische Studien über Bonin-Inseln, 1908) basing on his collection in 1905. Before his trip, the botanical exploration by Captain Beechey's expedition was made in 1827. In 1862 and 63 collections were made by two Japanese herbalists, in 1879 by R. Yatabe and J. Matsumura of the Tokyo Imperial University, and in 1887 a small collection was made in Sulphur Islands by four members of the Tokyo Botanical Society. For these collections, so far as I could ascertained, there is no record of *D. cordata*. The lack of this weed in Guam, up to 1914 (Merrill) or to 1933 (Kanehira), seems to confirm that the population of the Bonins was introduced from Hawaii between 1885 and 1905. Regarding the plant in the south end of Idzu Islands, it might reasonably be attributed that the plant, which also belongs to var. *pacifica*, was recently transmigrated from the Bonins first to Isl. Hachijo. Although the plant is now a weed on trail-sides and waste grounds there, the introduction might most probably be after than 1887. In this year, S. Okubo and six members of the Tokyo Botanical Society made an intensive botanizing trip to Idzu Islands, still they found no *Drymaria* there. If the introduction of this weed into the Bonins be at the end of nineteenth century or the beginning of twentieth century, it is quite natural that Okubo and others failed to find it. According to the tale of the inhabitants of Isl. Aogashima, situated about 60 km south of Hachijo, the plant was carried back by a woman from Hachijo in the near past for an ornament. Then it was dispersed rapidly throghout the island, consequently the population of Aogashima is var. *pacifica*. That there is no record of this weed for islands north of Hachijo up to now well indicates its recent introduction to Idzu Islands.

In temperate and tropical Old World, there is another plant which has hitherto been passed as *Drymaria cordata*. It is easily distinguishable from the New World and the Pacific populations, even under naked eyes, by the pyriform flower-buds which consist of sepals herbaceous, strongly tricarinate and densely glandular-papillose on the back especially on the keel (Fig. 1, A). The upper part of stems is sometimes glandular-granulate. Petal-lobes are oblong to linear-oblong and commonly obtuse to rounded or rarely acute at the tip, and are gradually narrowed to the claw, in other words, there is no sign of dentation at the base of lobes (Fig. 1, A). Stamens are almost always two, or rarely the abortive third one appears. Styles are connate to over a half of the length, but sometimes three-parted (Fig. 1, A). The number of ovules in an ovary is two to four. Ripe seeds are 1.5 mm across, dark brown and covered by flat-topped protuberances especially on the back. Compared this Old World plant with the New World and the Pacific one, it is indiscernible in the characters of stems and leaves; however, petal-lobes are rather exceptionally acute at the tip and always not denticulate at the base in the Old World plant, while they are always acute to acuminate at the tip and almost always denticulate at the base in the New World and the Pacific one; stamens are mostly two and never attain to five in the former against five in the latter though they decrease sometimes to two; the degree of fusion in styles is usually higher in the former than the latter; ovules of the former are generally fewer than the latter especially the Pacific plant. In those characters stated above, the Old World plant can merit of a specific recognition. On this basis, the following names hitherto proposed should be commented for the nomenclature. From Java, Blume described *Drymaria diandra* in 1825, Miquel distinguished *D. cordata* forma *β. indica* in 1855, and from New Guinea, F. Müller described *D. gerontogea* in 1877. I could examine, through the courtesy of Dr. J. H. Kern, the fragments of the type-collection of which Blume's and Miquel's names were based. They are unmistakably identical with each other in the character of flowers. F. Müller's binomial is, according to Index Kewensis, nothing more than a renaming of *D. diandra* Bl. Therefore the earliest and validly published *Drymaria diandra* Bl. becomes the correct name of the Old World plant. Although Blume indicated no exact locality other than " in paludosis montanis Javae insulae," the specimen in the Leiden herbarium, sect. 99, 143-199, can be chosen as the lectotype.

I examined the specimens from the Old World, viz. the Ryukyus (TI), Formosa (TI and the collection by Dr. T. S. Liu in Herb. Mizushima no. 13976), China (Szech'uan, Hand.-Mazz. nos. 1114 & 5241; Yunnan, J. F. Rock no. 6419), India (Punjab, W. Koelz no. 4554), Philippines (Elmer nos. 5777 & 16904); and all of them agree with *D. diandra*. According to Dr. J. R. Sealy, all Indian specimens identified by Edgeworth & Hooker fil. as *D. cordata* and used for the preparation of Hooker's Flora of British India belong to *D. diandra* Bl.; still, Edgeworth & Hooker fil. cited *D. extensa* Wallich and *Cerastium cordifolium* Roxburgh as synonyms. The former is no doubt *D. diandra*, but the latter is in truth very near to *Stellaria aquatica* Scop. (=*Myosoton aquaticum* Moench) and it should not be reduced to a *Drymaria* species. Thence the geographical area of *D. diandra* includes, so far as I am aware, Java, Sumatra, New Guinea, India, Indochina, China (Szech'uan, Yunnan, Hongkong, Hainan, and other places), Philippines, Formosa, and the Ryukyus. F. M. Bailey (Comprehensive Cotalogue of Queensland Plants 48, 1909) cited *D. diandra* as is native there, yet I could not find this name or *D. cordata* in other floras dealing with Australia and New Zealand (Fig. 2).

In Africa, *D. cordata* has been reported from various parts. Examining the specimens at Bruxelles from Congo, Angola, and Tanganyika, I could verified that both *D. cordata* and *D. diandra* are represented (Fig. 2). Among them, J. Gossweiler no. 4640 from Angola and W. Mullenders no. 400, Bequaert no. 1758, R. Germain no. 2399 from Congo belong to *D. diandra*, and R. B. Drummond & J. H. Hemsley no. 2132 from Tanganyika can be referred to *D. cordata* var. *cordata*. J. Louis, no. 171 from Mongo, Congo is referable to *D. cordata* var. *pacifica* in shorter styles about 0.5 mm long and fused to 1/3 from the base, and in scarious calyces on pedicels prominently naked in the upper 0.5 mm. Moreover,

L. Hendrickse, no. 629 from Ruanda—Mahavura, Congo represents an intermediate characters between *D. diandra* and *D. cordata* in the shape of flower-buds broadest at the middle or in the upper half, weaker nerves on the outer surface of sepals, styles fused up to 1/3 of the length, and in well developed three stamens. Pedicels are almost glabrous on this specimen, and this point is rarely met with in both species especially in *D. cordata* var. *cordata*. Since the African specimens examind are but a few, I am not of any conclusion except for saying that in those districts mentioned above, the number of specimens belonging to *D. diandra* was more than that of *D. cordata*. Fig. 39 in Hutchinson & Dalziel, Flora of West Tropical Africa **1** (1): 111 (1927) appears to be *D. cordata* var. *cordata*.

As the result of my study, I conclude that the so-called "*Drymaria cordata*" can be divided into three taxa. *D. cordata* Willd. var. *cordata* is a plant of continental South America, Central America, West Indies, and introduced into Florida in North America. Var. *pacifica* m. may be a native of Galapagos Islands, and occurs also in adjacent parts on the Pacific slope of South American continent, thence migrated to Hawaiian Islands, the Bonins including Sulphur Islands and to the south end of Idzu Islands in Japan. The last one, *D. diandra* Bl. has long been confused with *D. cordata*. It spreads over Malaysia, India, Indochina, south to west China, Formosa and the Ryukyus. As stated above, there occurs a vast area lacking these plants, viz. Polynesia, Melanesia and Micronesia. Thus *D. cordata* Willd. is not a pantropic species, but now it is likely to be deemed as a South American species which is pretty polymorphic in that continent. While *D. diandra* Bl. may be an aboriginal species of somewhere in the tropical Old World. The report that "*D. cordata*" was never found in Malay Peninsula before January, 1921 by Ridley (Flora of the Malay Peninsula **1**: 150, 1922) seems to be rather surprising. According to Schumann & Lauterbach (op. cit. 1901), *D. cordata* occurs in Bismarck Archipelago and *D. diandra* in Kaiser Wilhelms Land in New Guinea, although both lands are situated so closely. There is no citation of *Drymaria* in Boissier's Flora Orientalis and the floras dealing with the Mediterranean coasts of Eupope. Since the pedicels are jointed at the base and viscid by glandular-papillae, they stuck easily on the bodies of animals including man; therefore the dispersal of seeds is necessarily speedy. Considering these facts together with the contacts of Asiatics or Europeans in the temperate and tropical world, *D. cordata* and *D. diandra* show unexpectedly conservative areas excepting, at present, African continent.

As to the populations of tropical Africa, I can not say anything but both species are found in that continent. Up to present, numerous publications quoting the name "*Drymaria cordata*" have been appeared, yet I failed to assign the plant accurately because of their lacking or insufficiency of descriptions. That *D. diandra* and *D. cordata* with two geographical races are found in Africa may presumably be ascribed to the human agency, if a bold supposition be permitted to me. On African populations, much interesting problems are left over to the further investigations.

Drymaria cordata (L.) Willd. ex Roemer et Schultes, Syst. Veg. **5**: 406 (1819)—Humboldt, Bonpland et Kunth, Syn. Pl. Aequinoct. **3**: 342 (1824)—Seringe in DC., Prodr. **1**: 395 (1824).

var. **cordata.**

D. cordata (L.) Willd., s. str.: Grisebach, Fl. Brit. W. Ind. 56 (1859), quoad *α*.—Rohrbach in Mart., Fl. Brasil. **14** (2): 259, t. 60 (1872), quoad *α*.—Fawcett et Rendle, Fl. Jam. **3** (1): 175, f. 67 (1914)—Hutchinson et Dalziel, Fl. W. Trop. Afr. **1** (1): 111, f. 39 (1927), quoad fig.—Small, Man. S. E. Fl. 503, fig. (1933).

Holosteum cordatum L., Sp., Pl. 88 (1753).

H. diandrum Swartz [Prodr. 27 (1788)], Fl. Ind. Occ. **1**: 221 (1797)—Seringe, 1. c. 393 (1824).

Drymaria diandra (Sw.) Macfadyen [Fl. Jam. **1**: 52 (1837)], non Blume 1825.

D. cordata Willd. *β. diandra* (Sw.) Grisebach, l. c. 56 (1859).

[Ill.] Rohrb., l. c. (1872); Fawc. et Rendle, l. c. (1914); Hutch. et Dalz., l. c. (1927); Small l. c. (1933).

Alabastra infra medium latissima, basi rotundata, apice sensim acutata. Sepala herbacea, oblonga oblongo-lanceolatave, apice acuta acuminatave et non raro recurvata, dorso saepe dense glanduloso-papillosa. Petalorum lobi saepe ad basin repando-denticulati, apice acuti vel acuminati, sinu acuminato. Pedicelli saepe ex toto dense glanduloso-papillosi, rarissime glabri.

Type locality: Jamaica.

Lectotype: no. 109-1 in Linn. Herb., London.

Distr.: Continental South America, West Indies, Central America (acc. Small & others), Florida peninsula in North America (acc. Small), Africa (Tanganyika).

var. **pacifica** Mizushima, var. nov.

'*D. cordata* Willd.': Nakai in Bull. Biogeogr. Soc. Jap. **1**: 257 (1930)—St.

John et Hosaka, Weeds of Pineapple Fields in Hawaii 85, fig. (1932)—Svenson in Amer. Journ. Bot. **22**: 232 (1935)—Mizushima in Misc. Rep. Res. Inst. Natur. Resources, no. 38, 119 (1955).

[Ill.] Pope, Man. Wayside Pl. Hawaii 66, pl. 28 (1929); St. John et Hosaka, l. c. (1932); Makino's Ill. Fl. Jap. Suppl. fig. 3623 (Mar. 1956).

A typo sepalis praecipue in fructu scariosis nitidulis, sparse minutissimeque glanduloso-granulatis, pedicellis circa apicem ca. 0.5 mm longo fere semper nudis diversa.

Specim. exam. Galapagos Islands: 100 ft. alt., Academy Bay, Indefatigable Isl. (Apr. 1, 1930, H. K. Svenson, no. 65, GH)—holotype; do. (J. T. Howell, no. 9158, GH); Chatham Isl. (G. Baur, no. 3, GH); do. (A. Stewart, no. 1517, GH); Charles Isl. (A. Stewart, nos. 1514, 1515, 1516, GH); Albemarle Isl. (A. Stewart, no. 1513, GH); James Isl. (J. T. Howell, no. 9671, GH).

Continental South America: Bolivia (nos. 233, 735, 5405, GH); Colombia (nos. 501, 5358, GH); Peru (nos. 1064, 15972, GH).

Bonin Islands: Chichi-jima (Jul. 14, 1905, H. Hattori, TI); do. (Jun. 30 1920, T. Nakai, TI); do. (Y. Ogura, TNS nos. 42706, 42707, 124955); Haha-jima (Jun. 20, 1920, T. Nakai, TI); do. (Aug. 5, 1933, T. Tuyama, TI); Nakôdo-jima (Apr. 10, 1936, T. Tuyama, TI); Kita-iwôtô (Jun. 21, 1920, T. Nakai, TI); do. (Aug. 20, 1930, A. Yamamoto, TI); do. (Jul. 25, 1933, T. Tuyama, TI); do. (Nov. 21, 1935, T. Tuyama, TI); Naka-iwôtô (Jun. 23, 1920, T. Nakai, TI); do. (Aug. 21, 1930, A. Yamamoto, TI); Ogasawara (Nishimura, TI).

Idzu Islands: Isl. Hachijo (Sept. 18, 1921, M. Ogata, TI); do. (N. Satomi, no. 10306, TI); do. (J. Ohwi & N. Maruyama, TNS no. 81179); do. (T. Yamazaki, no. 3018, TI); Isl. Aogashima (Nov., 1954, M. Mizushima, TI).

Distr.: Galapagos Islands, Continental South America (Bolivia, Colombia, Peru), Hawaiian Islands, Bonin Islands including Sulphur Islands, Idzu Islands (Isl. Hachijo and Aogashima), Africa (Congo).

Drymaria diandra Blume, Bijdr. Fl. Nederl. Ind. 62 (1825), e typo—Schumann et Lauterbach, l. c. 309 (1901).

D. retusa Wallich apud Wight et Arnott, Prodr. Fl. Ind. Or. 359 (1834), pro syn.

D. cordata f. *β. indica* Miquel in Junghuhn, Pl. Jungh. **4.**: 395 (1855), e typo.

D. extensa Wallich, Cat. no. 647 ex Edgeworth et Hooker fil. in Hooker fil., Fl. Brit. Ind. **1** (2): 244 (1874), pro syn.

D. gerontogea F. Müller [Descr. Not. Papuan Pl. **1**: 87 (1877), in observ.], secundum Ind. Kew.

'*D. cordata* Willd.': Wight et Arnott, l. c. 359 (1834)—Miquel, Fl. Ind. Bat. **1** (1): 1053 (1855); idem Suppl. prim. (Prodr. Fl. Sumatr.) 150 (1860)—Edgeworth et Hooker fil., l. c. 244 (1874), excl. syn. *Cerastium cordifolium* Roxb.—Forbes et Hemsley, Ind. Fl. Sin. in Journ. Linn. Soc. Bot. **23**: 71 (1886)—Trimen, Handb. Fl. Ceyl. **1**: 87 (1893)—Makino in Bot. Mag. Tokyo 8: (349) (1894); **10**: 57 (1896)—Ito et Matsumura, Tent. Fl. Lutchu. 317 (1899)—Matsumura et Hayata, Enum. Pl. Formosa. 37 (1906)—Gagnepain in Lecomte, Fl. gén. Indoch. **1** (3): 266, f. 26, 13-14 (1909)—Matsumura, Ind. Pl. Jap. **2** (2): 83 (1912)—Merrill, Enum. Philip. Pl. **2** (2): 139 (1923)—Backer et Slooten, Geillust. Handb. Jav. Theeonkr. 111, t. (1924)—Backer, Onkruidfl. Jav., 2 Aufl., 245 (1930)—T. Suzuki in Masamune, Short Fl. Formosa 61 (1936)—Sonohara, Tawada et Amano, ed. Walker, Fl. Okin. 51 (1952)—Masamune, Enum. Tracheoph. Ryukyu Ins. **4** in Sci. Rep. Kanazawa Univ. **2** (2): 94 (1954), sphalmate *Drynaria*.

[Ill.] Gagnep., l. c. (1909); Back. et Sloot., l. c. (1924); Tak. Ito, Taiwan Shokubutsu Dzusetsu fig. 432 (1927).

A *Drymaria cordata* alabastris supra medium latissimis, sepalis distincte tricarinatis, lobis petalorum fere latioribus et basi non angulatis vel denticulatis, staminibus saepissime duobus, stylis saepe ultra medium connatis differt.

(Descr. add. fl.) Alabastra pyriformia supra medium latissima, apice obtusa versus basin angulato subtruncata. Sepala tricarinata cum costis validissimis et minute saepe denseque glanduloso-papillosis itaque fere albis in sicco atque venis lateralibus certe circa basin elevatis fere infra apicem costae conjunctis, naviculiformia tenuiter herbacea opaca in sicco, apice acuta, anguste vel raro non albomarginata, dorso sparse glanduloso-papillosa, 2.5-3.5 mm longa. Petala 5, alba bifida, lobis oblongis anguste oblongisve apice acutis obtusis rotundatisve saepissime uninerviatis sinu rotundato angusto, longe unguiculata, glabra, 2-3 mm longa. Stamina 2(-3), petalo breviora, filamentis albis glabris basi non raro dilatatis disco insertivis, antheris lutescentibus rotundatis dorsifixis saepe basi liberis. Disci tenue crateriformes basem ovarii circumdati, raro bene evoluti et basi ovario 1/4 aequialti. Ovaria globosa vel ovalia breviter stipitata ca. 1 mm alta, (2-)3-4-ovulata, stylis saepe supra medium connatis reliquis trifidis rariore tripartitis ca. 0.5 mm longis. Semina fusca atrifuscave sub microscopice praecipue dorso depresso tuberculata opaca, 1.5 mm in diametro.

Type locality: 'in paludosis montanis Javae insulae.'

Lectotype: sect. 99, 143-199 in Rijksherbarium, Leiden.

Distr.: India, Indochina, Malaysia, S. & W. China, Formosa, Ryukyu Archipelago, Africa (Angola, Congo), Australia (Queensland, acc. F. M. Bailey).

Drymaria cordata という学名はヤンバルハコベ（田代安定 ex 牧野, 1896）とかネバリハコベ（松村任三, 1912?）とか呼ぶナデシコ科の雑草に当てられて来た。之は日本近隣の島々では伊豆八丈島，青ヶ島から小笠原諸島，及び離れて琉球列島から台湾に産し，両者は従来同一種と見做されて上記の学名，和名で通つて来た。ところが結論的には八丈〜小笠原の者が *D. cordata* Willd. で，琉球〜台湾の者は *D. diandra* Bl. とすべきことが分つた。両種は外見上酷似するが，花蕾の形と外面の短腺毛の様子とが見易くて良い区別点となる。

D. cordata は西印度諸島のジャメイカ島の植物を基として記載されたもので，南米大陸や西印度諸島産が基準形 var. *cordata* である。ところが太平洋の諸島中，ガラパゴス群島，ハワイ群島，小笠原〜八丈島の者は少し異り，var. *pacifica* として区別出来る。*D. diandra* はジャバ島から記載されたもので，広く東南アジアの温〜熱帯地方に分布する。面白いことに，ポリネシア，メラネシア，ミクロネシアには（ビスマルク群島に *D. cordata* の報告あり）全く両種共に産せず，18〜19 世紀にメキシコとフィリピンとを結ぶ定期航路があつたにも不拘，全然人為的影響の痕が無いのは奇異の感がある。又小アジアから地中海沿岸地方にも産せず，飛んでアフリカ大陸中〜南部に見られる。熱帯アフリカから従来 *D. cordata* として報告された植物が *D. diandra*, *D. cordata* var. *cordata*., var. *pacifica* 全部を含むことに先ず相違はない。アフリカ産は検した標本が少いので結論的な事は言えぬが，ヨーロッパ人による大帆船時代からの数多の探険旅行を併せ考えれば，全部帰化品と云うことも想像可能であろう。

詳細は欧文欄を参照されたいが，要するに今日まで汎熱帯性雑草として *Drymaria cordata* Willd. に当てられて来た植物は2種1変種に分割するを至当とし，且つ汎熱帯性には非ずして夫々南米大陸（*D. cordata*）及びアジア熱帯地方（*D. diandra*）に分布の中核を想定し得るものである。和名ヤンバルハコベ，ネバリハコベは共に *D. diandra* に命ぜられたものであり，ミズクサも琉球の方言名であるから，八丈島，青ヶ島にある *D. cordata* var. *pacifica* に和名が無くなる。よつて青ヶ島で称していた**オムナグサ**を新和名に採用する。之は嘗てオムナさんと云う同島の婦人が八丈島から該草を携え帰つたことを記念した名である。